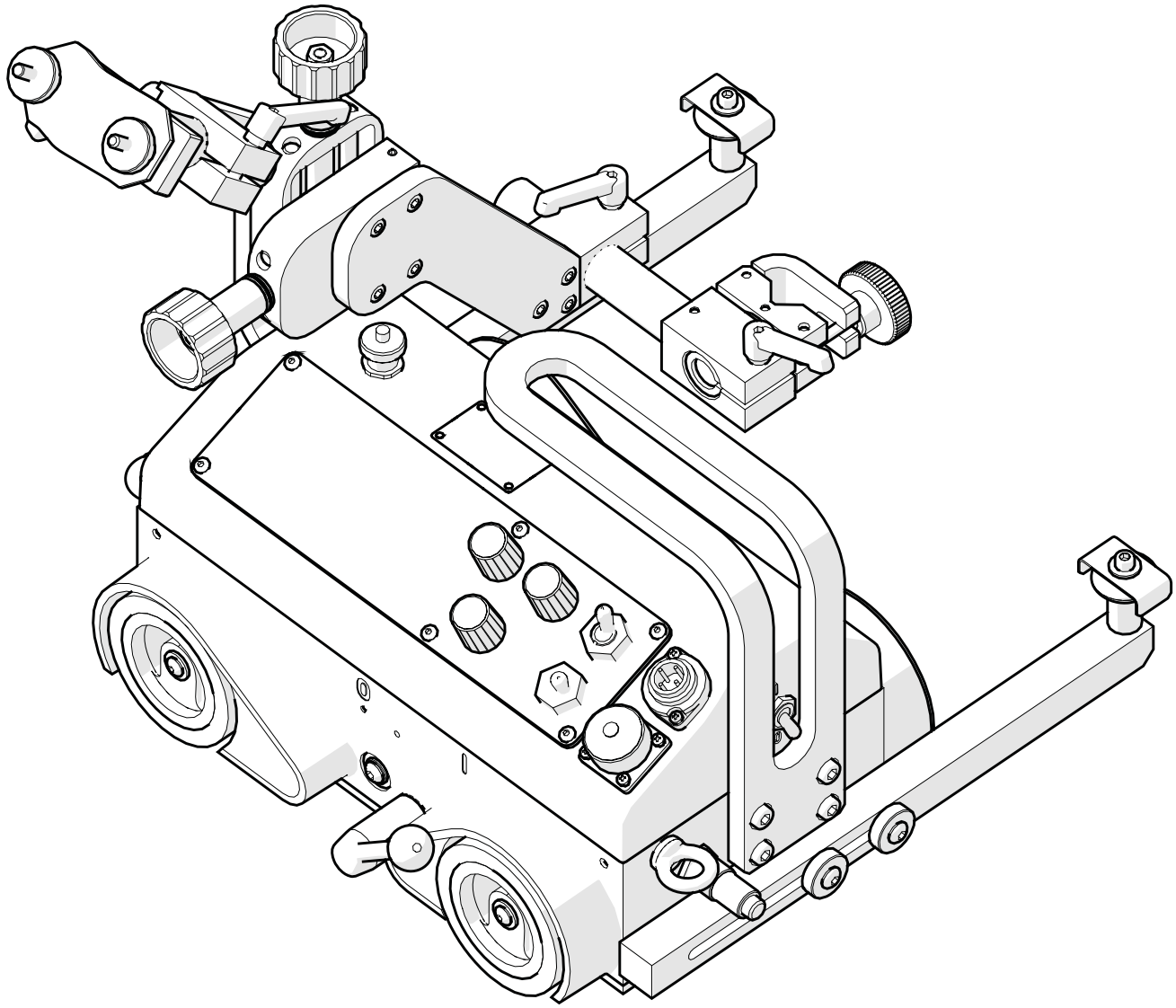
TRADEMASTER INDUSTRIAL TOOLS

LIZARD

WELDING CARRIAGE

OPERATOR'S MANUAL



BEFORE USE, ENSURE EVERYONE USING THIS MACHINE READS AND UNDERSTANDS ALL SAFETY AND OPERATING INSTRUCTIONS IN THIS MANUAL .

Serial #..... Date of Purchase.....

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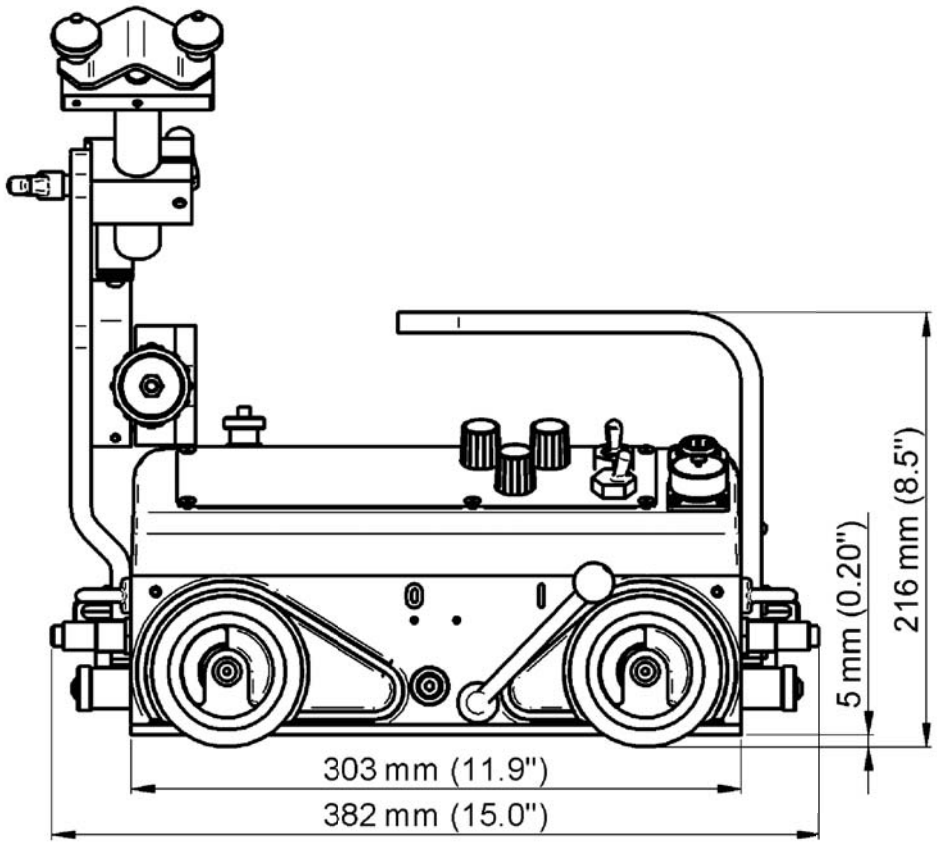
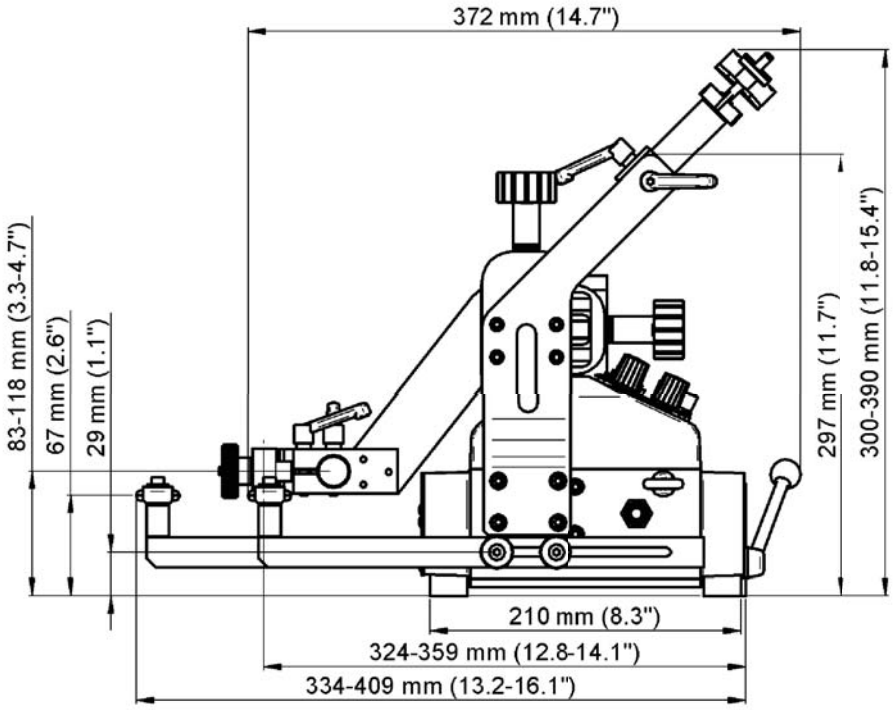
1. GENERAL INFORMATION

1.1. Application

The LIZARD Welding Carriage is designed to produce continuous or intermittent welds using MIG/MAG torches with handle diameter in 16–25 mm range (0.63–0.98''). The machine can work in PA, PB, PC, and PF welding positions. It is fixed by permanent magnets and contains four wheel drive with speed adjustment. The machine also enables welding with oscillation when equipped with an optional oscillator available on request.

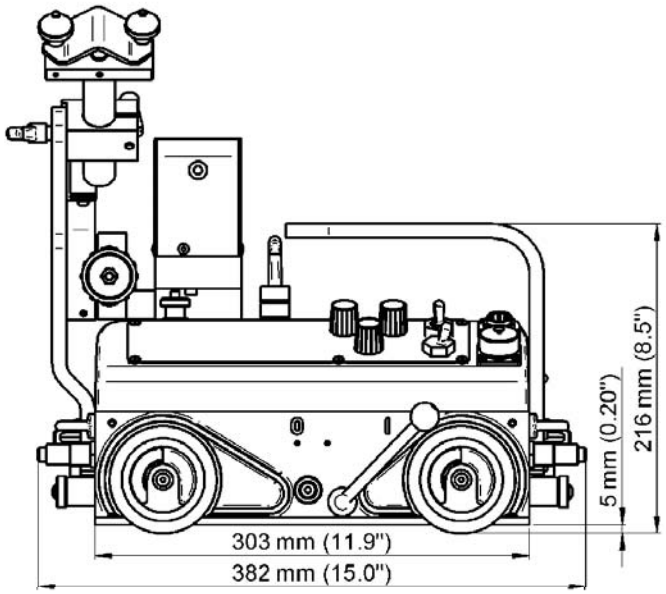
1.2. Technical data

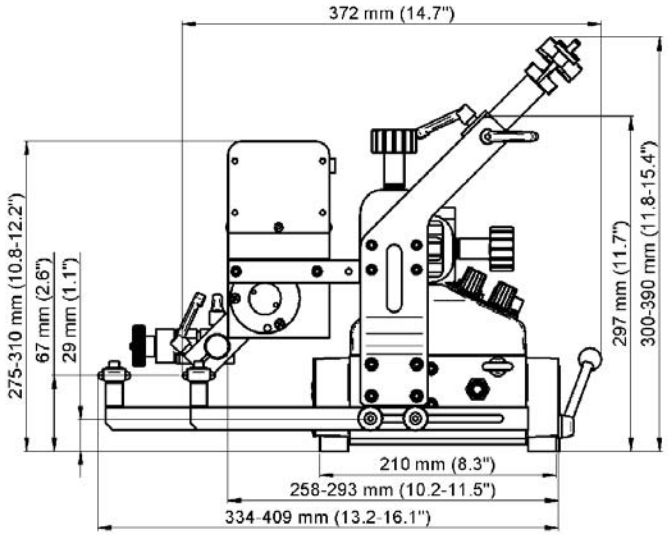




Welding position		~ 115–230 V, 50–60 Hz
Power		25 W
Welding position	horizontal	PA (flat), PB (horizontal vertical), PC (horizontal)
	vertical	PF (vertical up)
Minimum path convex radius		1500 mm (60”)
Minimum path concave radius		1500 mm (60”)
Torch type		MIG/MAG
Torch diameter		16–25 mm (0.63–0.98”)
Maximum torch reach		80 mm (3.15”)
Maximum weight of cables	horizontal work	12 kg (26.5 lbs)
	vertical work	8 kg (17.7 lbs)
Welding material thickness		minimum 5 mm (0.20”)
Ground clearance		5 mm (0.20”)
Pulling force	horizontal work	220 N
	vertical work	150 N
Torch adjustment range		35 mm (1.38”, up-down, left-right)
Follower arm adjustment range		75 mm (2.95”)
Horizontal speed		0–120 cm/min (0–47.2”/min)
Vertical speed		0–110 cm/min (0–43.3”/min)
Dimensions		382 mm (L) × 372 mm (W) × 390 mm (H) 15.0’ (L) × 14.7” (W) × 15.4’ (H)
Noise level		< 70 dB
Weight		8 kg (17.7 lbs)

1.3. Technical data (with oscillator)





Oscillation type	angular (maximum 11º)
Oscillation amplitude for r=150 mm (5.9'')	1–30 mm (1–100%)
Oscillation speed for oscillation amplitude of 10 mm (0.4'') and zero delay on tips	7–164 cycles/min (1–100%)
Delay on tips	0–5 s
Maximum torque	5 Nm (3.7 lb•ft)
Power	37W
Weight	16 kg (35 lbs)

1.4. Design

The LIZARD welding carriage contains a drive system with controller, cross slides, two follower arms, cable holder, and torch holder. The drive system comprises a gear motor that drives four rubber wheels of high thermal resistance.

The magnetic unit with powerful permanent magnets fitted at the carriage bottom ensures proper adhesion to ferromagnetic surfaces. Toggling the magnetic unit lever (Figure 1) to position “0” reduces the intensity of the magnetic field, what helps moving the welding carriage during positioning. The cross slides enable precise control of the torch holder position in both horizontal and vertical axis. Additionally, the machine can ignite an arc through the arc ignition socket when choosing a travel direction.

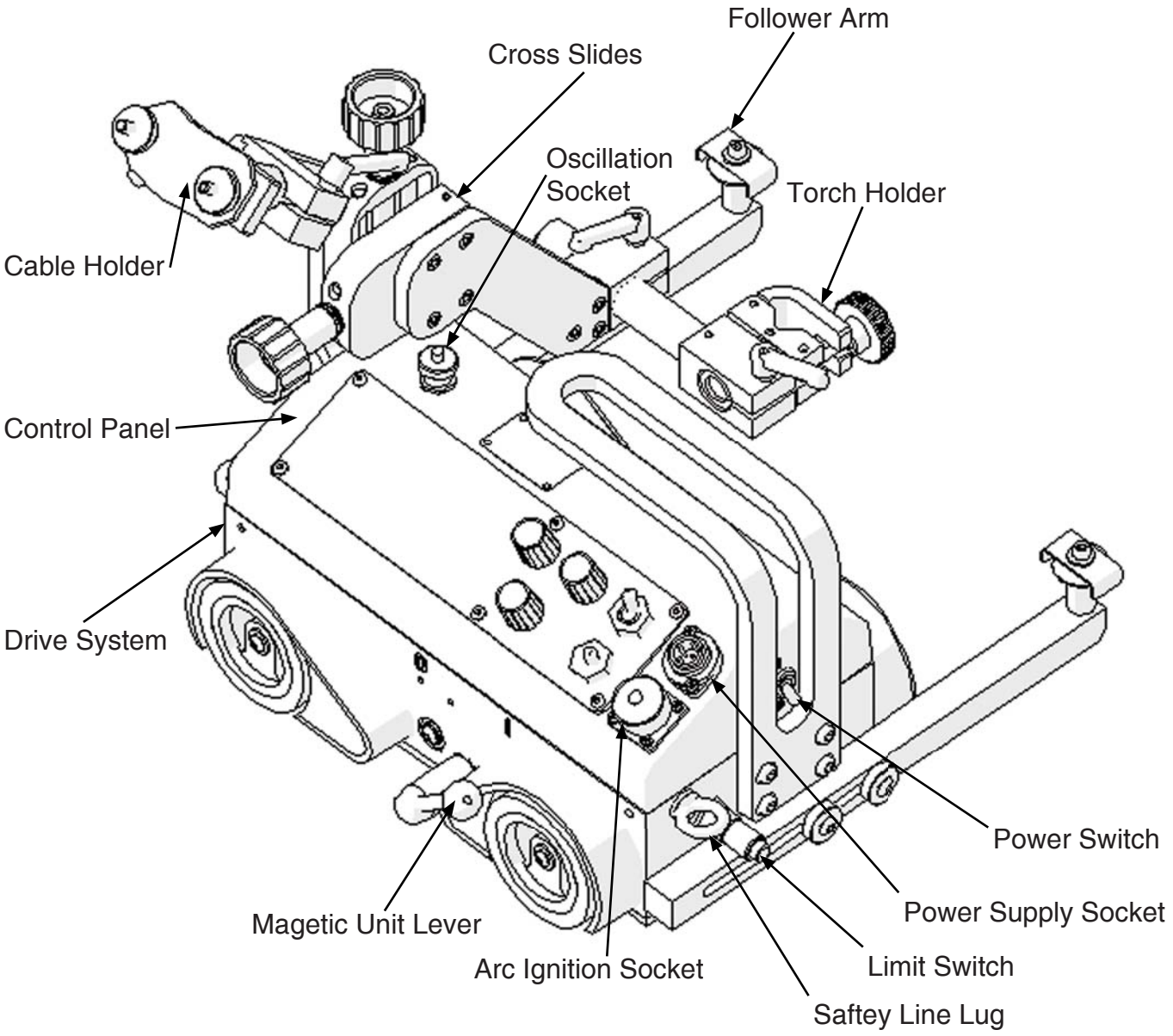


Figure 1. LIZARD welding carriage design

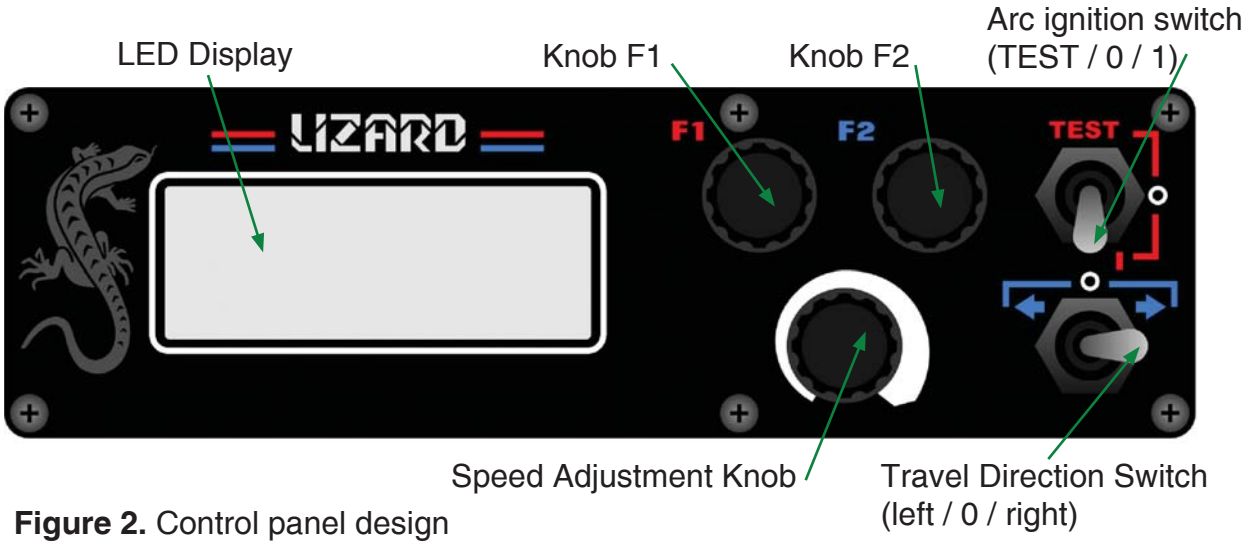


Figure 2. Control panel design

1.5. Equipment included

The LIZARD welding carriage is supplied with complete standard equipment in foam filled cardboard box. The included equipment consists of:

- Welding Carriage – 1 unit
- Foam Filled Cardboard Box – 1 unit
- Power Cord – 1 unit
- Arc Ignition Cable – 1 unit
- Cable Holder – 1 unit
- Low Torch Holder – 1 unit
- Short Torch Holder – 1 unit
- 4 mm Allen key – 1 unit
- Operator's Manual – 1 unit

2. SAFETY PRECAUTIONS

1. Before start, read Operator's Manual and complete proper occupational safety and health training.
2. Machine must be used only in applications stated in Operator's Manual.
3. Machine must be complete and all parts must be genuine.
4. Power supply specifications must conform to those stated on rating plate.
5. Power supply socket must be equipped with grounding pin.
6. Never carry machine by cord or yank it to disconnect plug from socket. It may cause power cord to break and result in electric shock.
7. Bystanders must not be present in immediate vicinity of machine.
8. Before start, check condition of machine and electrical installation, including power cord, plug, control panel, and wheels.
9. Keep machine dry. Exposing it to rain, snow, or frost is prohibited.
10. Ensure proper lighting at worksite.
11. Never use machine in vicinity of flammable fluids or gases, or in explosive environments.
12. Make sure that rubber of driving wheels is clean and not damaged.
13. Never disassemble driving wheels cover.
14. Remove objects attracted to chassis by magnetic unit.
15. Transport and position machine using carrying handle, with magnetic unit lever set to position "0".
16. Place machine on ferromagnetic material in such a way that wheels always touch surface and there is no contact between surface and chassis.
17. Do not stay underneath machine placed at heights.
18. Plug power cord into mains only when power switch is set to position "0".
19. Keep power socket clean. Do not use compressed air for cleaning purposes.
20. Mounting torches other than MIG/MAG type or torches with handle diameter outside 16–25 mm range (0.63–0.98'') is prohibited.
21. Maximum torch reach must not exceed 80 mm (3.15'').
22. Keep torch cables from touching surface (they must be suspended to reduce carriage load). Use only cables which maximum weight is 12 kg (26.5 lbs) for horizontal work and 8 kg (17.7 lbs) for vertical work.
23. Operating in welding positions: PD (horizontal overhead), PE (overhead), and PG (vertical down), as well as on curvatures with convex (concave) radius lower than 1500 mm is prohibited.
24. When operating at heights, use safety line to protect machine from falling down.
25. Always use eye protection (welding helmet, shield, and screen), hearing protection, gloves, and protective clothing during operation. Do not wear loose clothing.
26. Before every use, inspect machine to ensure it is not damaged. Check whether any part is cracked or improperly fitted. Make sure to maintain proper conditions that may affect machine operation.
27. Never try to manually stop motion of machine. For this purpose set travel direction switch to position "0".

28. Perform all maintenance work only with power cord unplugged from power socket.
29. Perform all repairs only in service centre appointed by seller.
30. If machine falls on hard surface, from height, is wet, or has other damage that could affect technical state of machine, stop operation and immediately send machine to service centre for inspection.
31. Never leave machine unattended during operation.
32. Remove from worksite and store in safe and dry location when not in use.

WARNING! Safety rules must be closely observed.

3. STARTUP AND OPERATION

WARNING! Read safety precautions before starting.

3.1. Preparation

Use carrying handle (Figure 3) for transportation and positioning at the worksite. Set all levers to position “0”: power switch, magnetic unit lever, arc ignition switch, and travel direction switch.

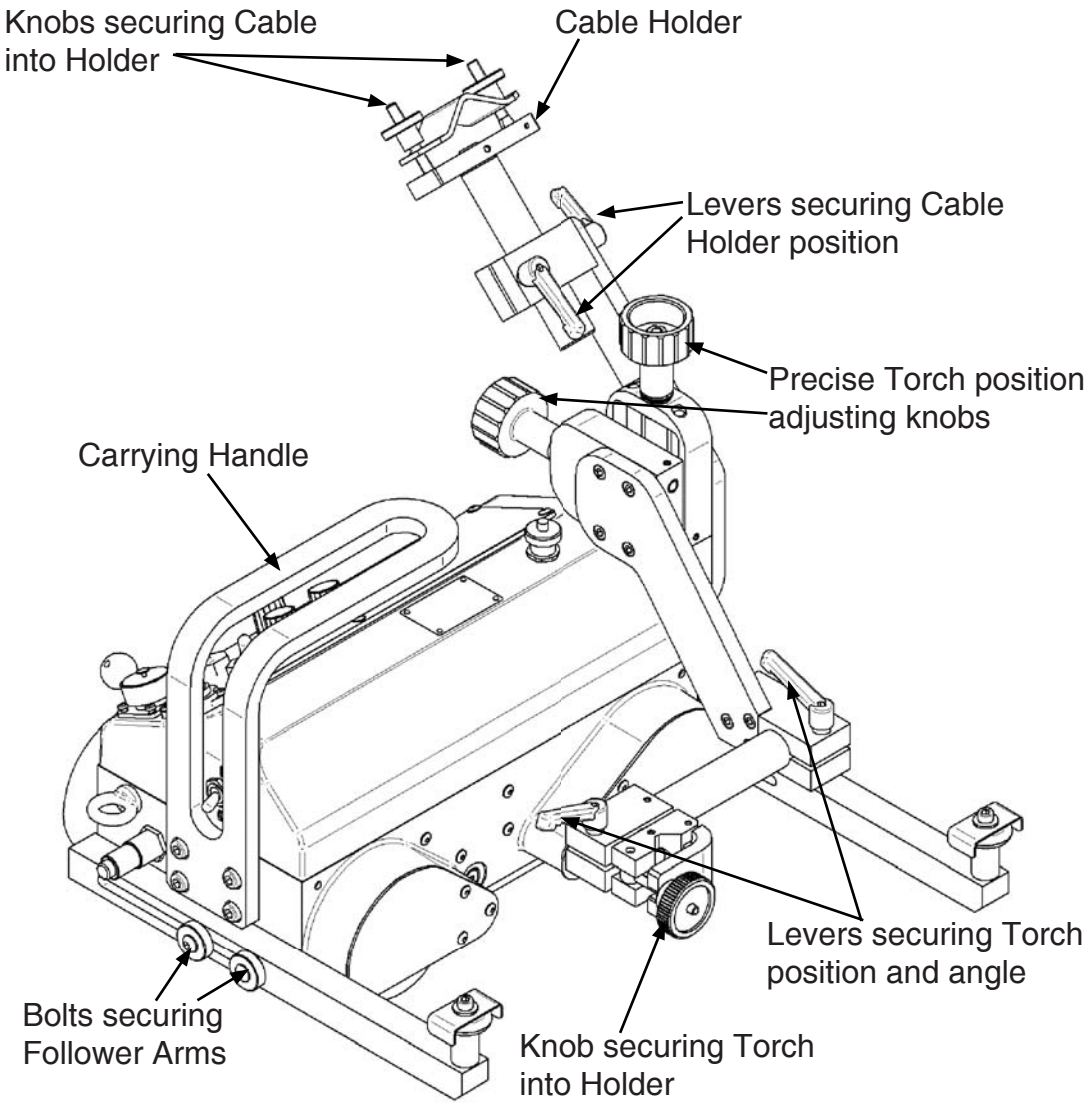


Figure 2. Control units

Plug the cord into power supply socket. Put a torch into the torch holder and secure with the knob. Then, put the torch cable into the cable holder, secure it with the knobs, and fix the holder in a proper position using the levers. If the machine is to be used to control the welding device, plug the arc ignition cable into the arc ignition socket. The cable works as a welding gun switch and comprises two wire pairs of a different colour. Connecting each pair enables to control an arc ignition of one welder.

To continuously track the travel geometry, set the first follower arm 10 mm (0.4") closer to the machine than the second one (Figure 4). For this purpose, unscrew the bolts that secure follower arms using supplied 4 mm Allen key and secure them after setting follower arms.

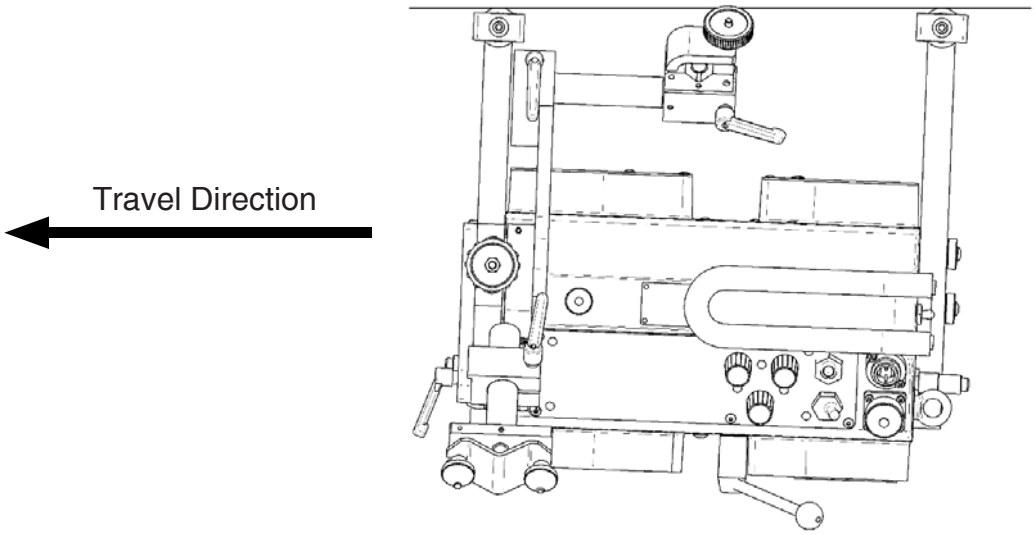
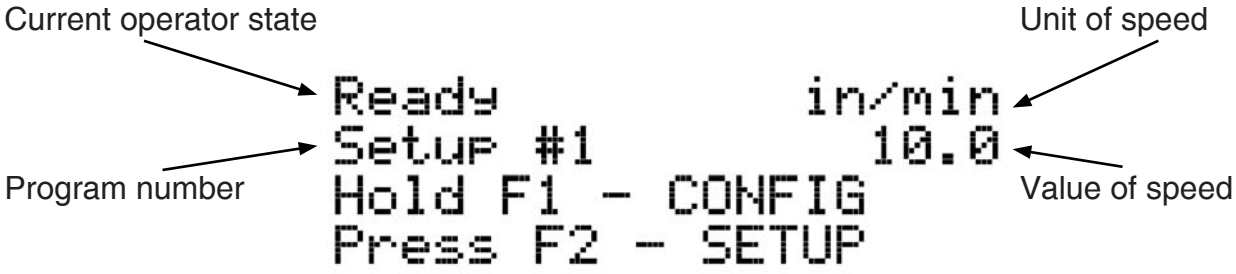


Figure 4. Proper follower arms position

Toggle the magnetic unit lever from left ("0") to right position ("I"), what changes the machine adhesion to work surface from minimum to maximum. Loosen the levers to adjust the position and angle of the torch, and set the torch position precisely using two knobs located at the cross slides. If the work is to be done along the vertical axis, perform welding upward (position PF according to EN ISO 6947). When operating at heights, attach a safety line to the lug. The safety line is not included in standard equipment.

3.2. Startup

Plug the power cord into mains and turn on the power by toggling the power switch to position “I”. The initial menu with the current firmware version number shows up on the display. Then the machine automatically checks for an oscillator connected to the oscillation socket. If the oscillator is found, the “Oscillator found” confirmation message shows up. Once the initialization of the control system is finished, the main menu from the Figure 5 shows up on the display.



Press and hold the knob F1 for about 3 seconds to enter into the configuration menu to set welding parameters.

3.3. Programming

The LIZARD welding carriage is equipped with a programming device that enables to define up to 40 welding programs. After you enter into the configuration menu, proceed as described in the Figure 6 to move among the parameters from the Table 1.

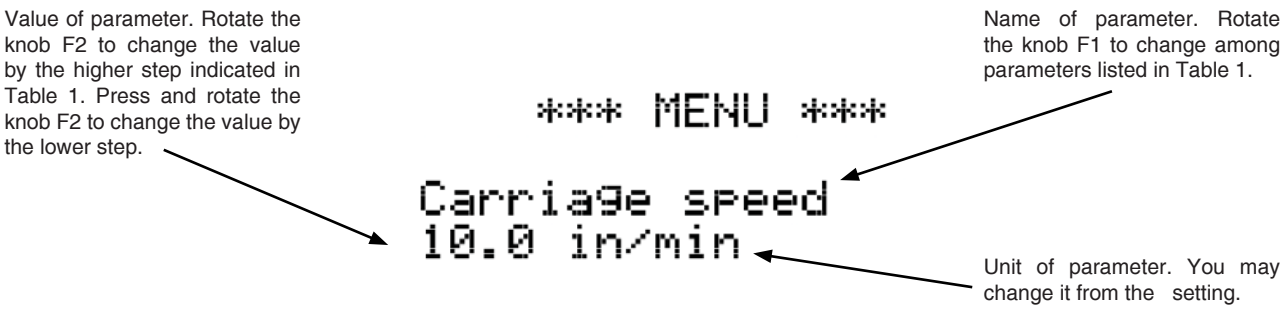


Figure 6. Configuration menu

To change the language of the menu, move to “Language”setting by rotating the knob F1 clockwise and then rotate the knob F2 to choose among the available languages. Once you set the rest of parameters from the Table 1, move to “Save setup”, choose a program number by rotating the knob F2, and press the knob to save current values under this number. The action is confirmed by showing “Done” message for a short period. To load a previously saved program, proceed as described, but from the “Load setup” setting. Then, to move back to the main menu (Figure 5), press the knob F1 and hold it for 3 seconds. If you do not save the chosen parameters, they will be active only until you change the current program number in the main menu.

3.4. Welding procedure

The Figure 7 shows a graphic description of the welding procedure that starts with the speed value that is shown in the main menu when choosing travel direction. The first stage involves making a weld and after that the carriage fills a crater (stage 2) for the chosen time. Next, the carriage performs a backweld (stage 3) and then moves to the starting point of a next weld (stage 4). The process repeats until the carriage reaches a value of the total length.

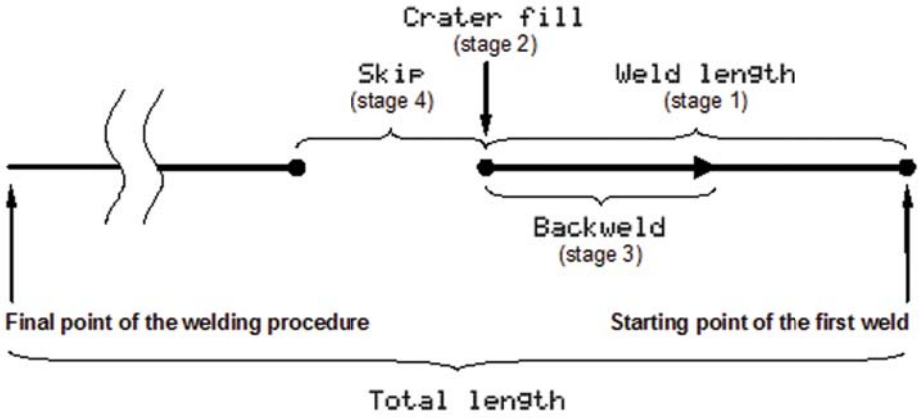


Figure 7. Visualization of welding procedure according to parameters from Table 1

Parameter	Value	Description
“Carriage speed”	0–52 in/min [step: 1 or 0.1]	Speed of the carriage.
“Weld legth”	1–100 in [step: 1 or 0.1]	Length of a single weld.
“Skip”	0–40 in [step: 1 or 0.1]	Space between welds. If set to zero, ‘crater fill’ and ‘backweld’ are reset and the carriage works in the continuous welding mode.
“Crater fill”	0–3 s [step: 0.1]	Time of filling a crater. Inactive, if ‘skip’ set to zero, what is indicated by the (!) sign.
“Backweld”	0–2 in [step: 0.1]	Length of a backweld. Shorter or equal to ‘weld length’. Inactive, if ‘skip’ set to zero, what is indicated by the (!) sign.
“Total length”	0–400 in or infinity [step: 10 or 1]	‘weld length’ and ‘skip’. If set to infinity, the program executes until the carriage is stopped manually.
“Unit”	cm or in	Unit used in the menu.
“Save setup”	1 - 40	Pressing knob F2 saves the current configuration under the indicated program number.
“Load setup”	1 - 40	Pressing knob F2 loads the configuration saved under the indicated program number.
“Language”	ENGLISH POLISH SPANISH FRENCH PORTUGUESE TURKISH	Language of the menu

Table 1. Settings available in basic version of LIZARD welding carriage

3.5. Operation

If the machine is to control a torch, toggle the arc ignition switch to position “I”. To check whether the arc ignition cable is connected correctly, toggle the switch to position “TEST”.

WARNING: If the arc ignition switch is set to position “I”, the torch starts welding immediately after choosing a travel direction.

In the “Ready” state of the main menu (Figure 5) you may change the current program ”Setup #1” by simultaneously pressing and rotating the knob F2. Use the speed adjusting knob to change the current welding speed. A clockwise rotation increases the speed by the step of 0.1, while a counterclockwise rotation decreases it by the same step.

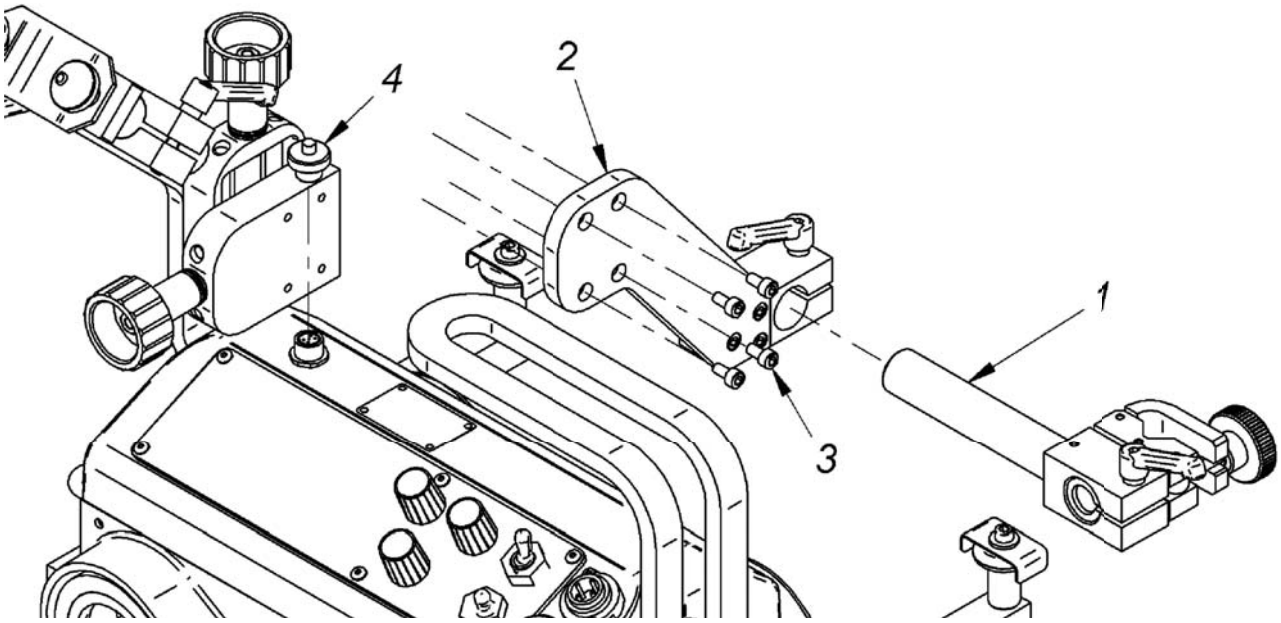
Use the travel direction switch to choose a direction of motion. The carriage will start moving according to the chosen program parameters. The message indicating the current operating mode shows up on the display during the program execution. You may control the carriage speed during operation using the speed adjusting knob, however, the new speed will not be saved if you change the current program in the meantime.

The carriage stops after reaching the total length and “Job’s done” confirmation message shows up on the display. Now, to move into the main menu, toggle the travel direction switch to position “0”. Once the work is finished, turn off the power using the power switch and unplug the power cord from mains.

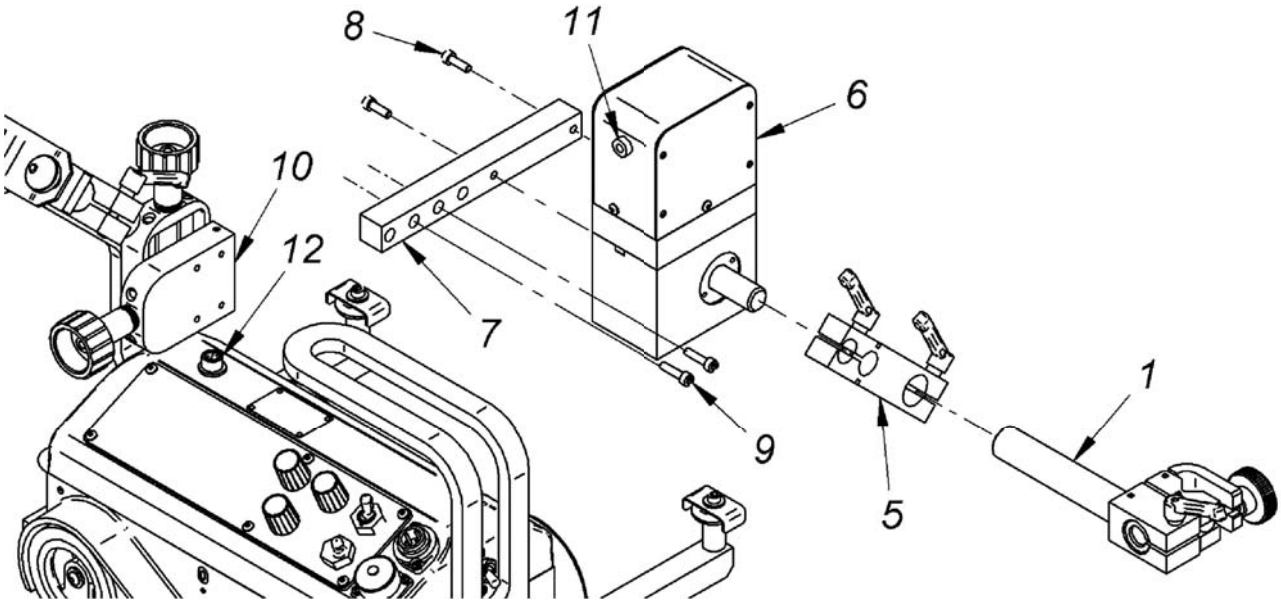
3.6. Using oscillator (optional equipment)

3.6.1 Installation

Mount the oscillator according to the following instructions.



- Disassemble torch holder (1).
- Disassemble torch plate (2) by unscrewing bolts (3).
- Unscrew cap (4).



- Fix arm (5) to oscillator (6).
- Fix oscillator (6) to link (7) using two M5x16 screws (8).
- Fix link (7) to cross slides (10) using two M5x20 screws (9).
- Fix oscillator plug (11) to oscillation socket (12).
- Fix torch holder (1) to oscillator arm (5).

3.4.2. Welding with Oscillation

Once the oscillator is connected to the LIZARD welding carriage, several new settings appear in the menu (Table 2). Welding with the oscillation is performed in a standard manner, however, the welds form a shape similar to the shape shown in the Figure 8 instead of a straight line from the Figure 7.

Parameter	Value	Description
“Osc. amplitude”	0–100% [step: 10% or 1%]	Relative amplitude of the oscillation.
“Osc. speed”	0–100% [step: 10% or 1%]	Relative speed of the oscillation. The higher the speed, the shorter the oscillation period.
“Osc. delay 1”	0–5 s [step: 1 or 0.1]	Delay in the top position of the oscillation.
“Osc. delay 2”	0–5 s [step: 1 or 0.1]	Delay in the bottom position of the oscillation.
“Dwell times lock”	YES NO	Choosing YES locks the capability of changing delay times during welding.

Table 2. Additional settings available with connected oscillator

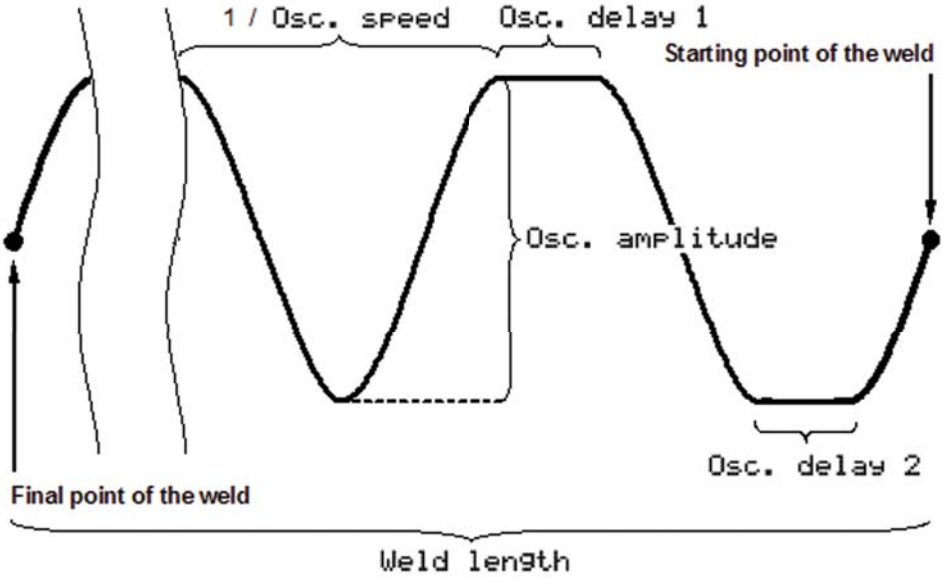


Figure 8. Graphic description of oscillation parameters from Table 2

3.6.3. Operation

Operating the LIZARD welding carriage with connected oscillator is performed similarly to operating without the oscillator. During welding with oscillator, the menu indicated in the Figure 9 shows up on the display.

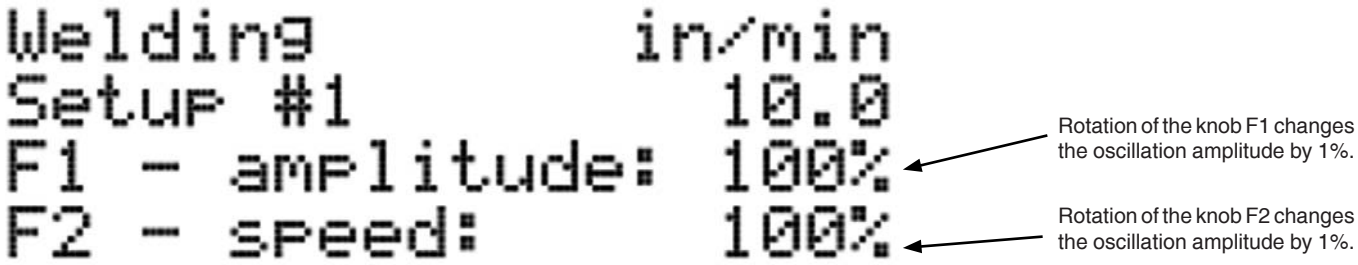


Figure 9. Menu shown during welding with oscillator

If “Dwell times lock” parameter is set to YES, pressing the knob F1 or F2 during operation does not trigger any action. Otherwise, the delay parameters show up on the display and you may adjust them online (Figure 10).

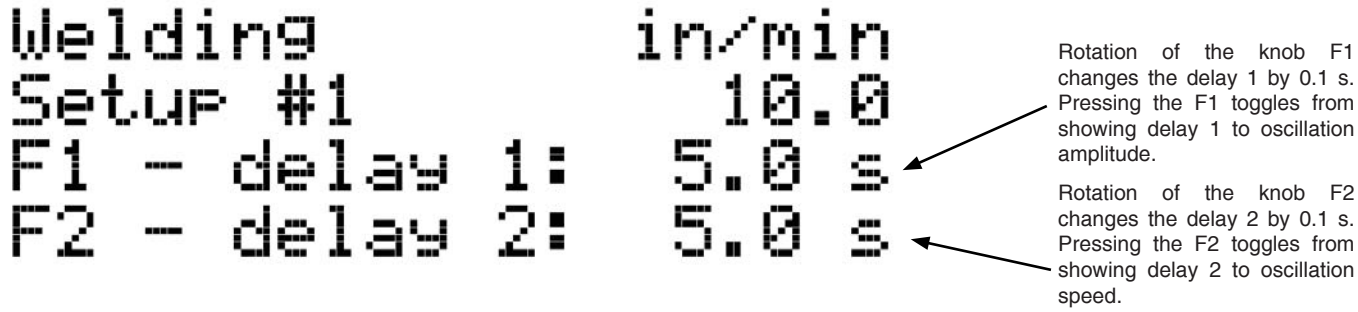
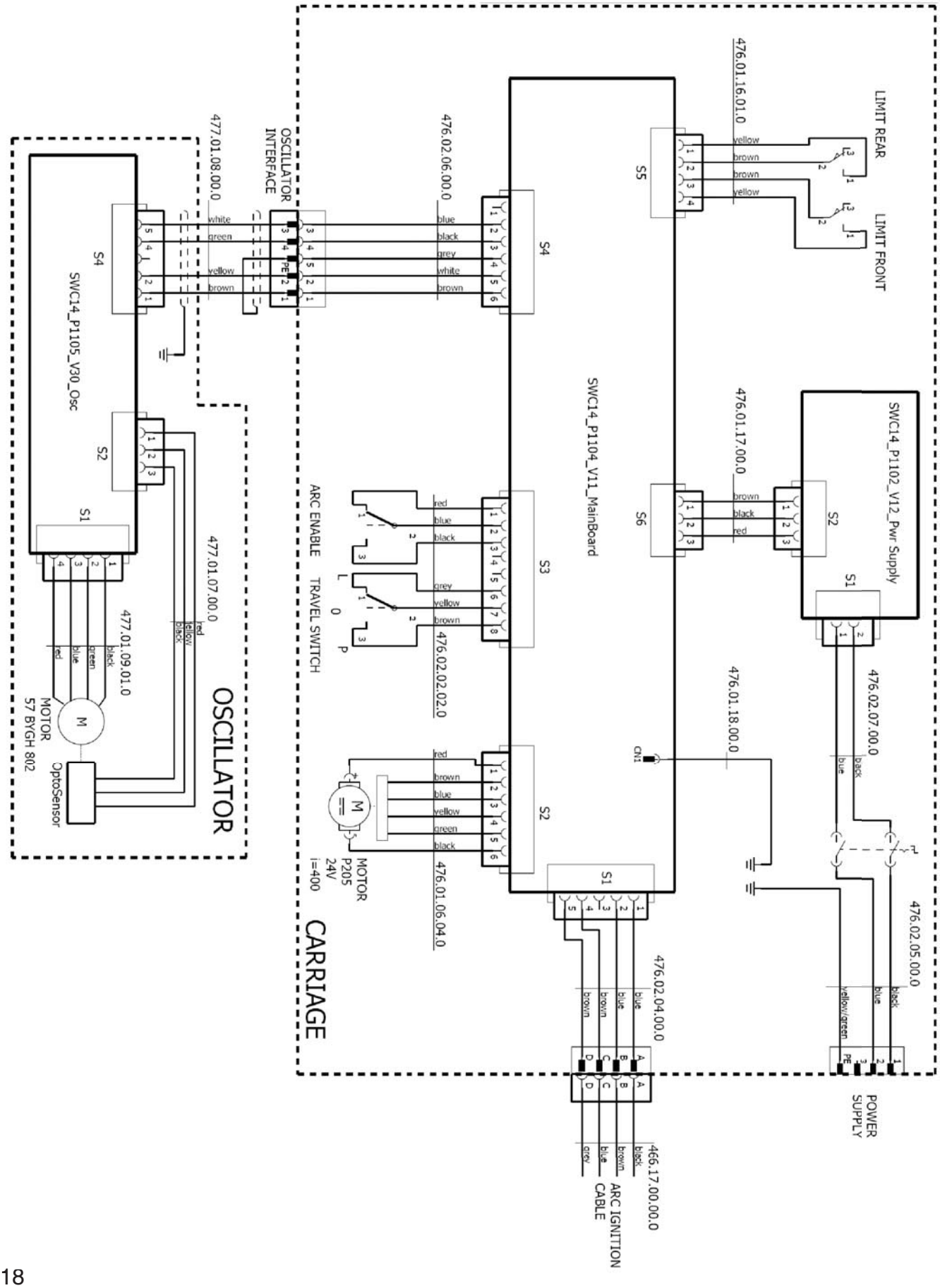


Figure 10. Menu that enables changing the oscillator dwell times

WIRING DIAGRAM

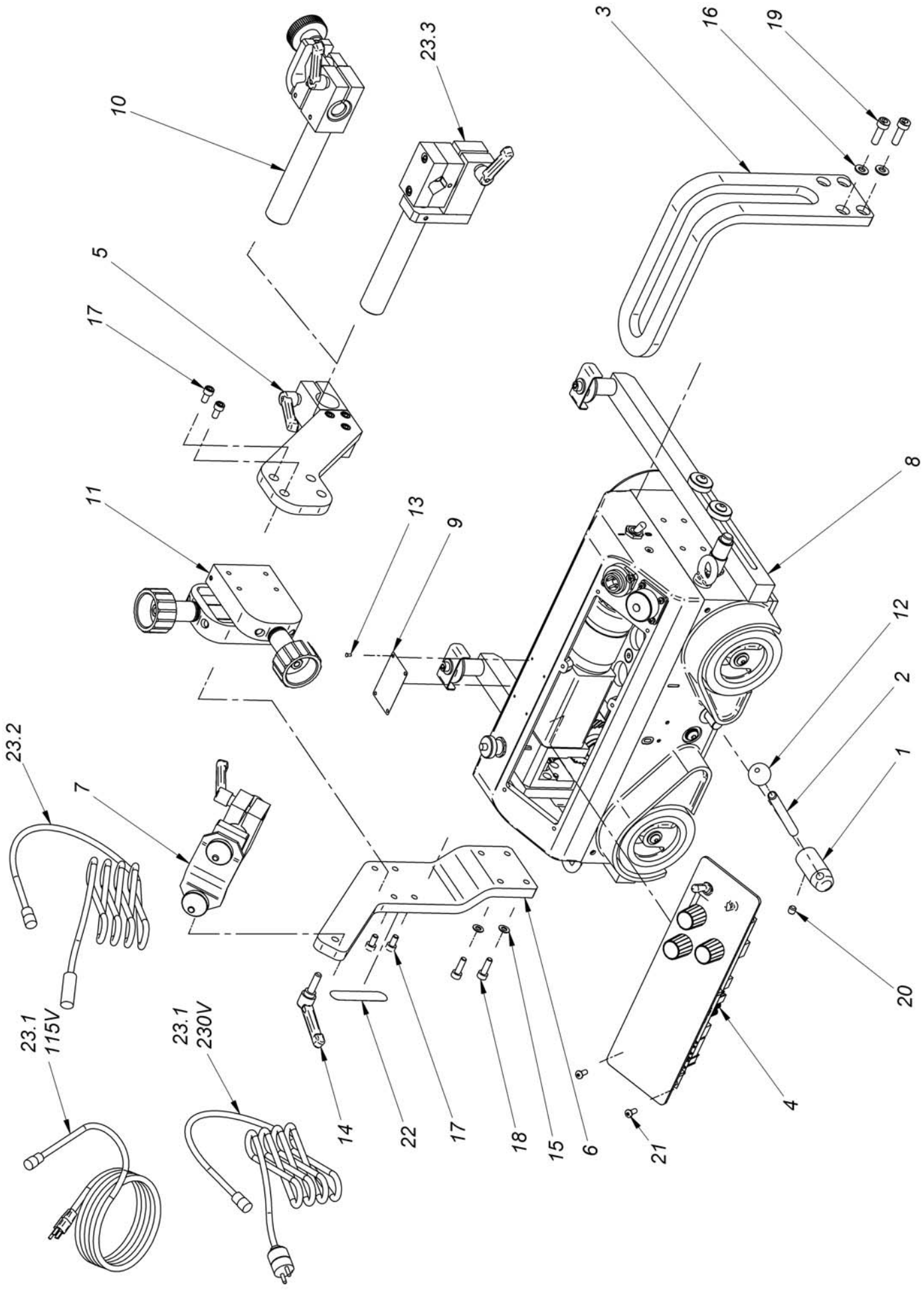


GENERAL ASSEMBLY

WA-LIZARD			240V	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
1	GLK-0476-01-11-00-0	2347	HANDLE KNOB	1
2	DZW-0476-01-12-00-0		LEVER	1
3	RKJ-0476-01-13-00-0	2348	HANDLE	1
4	PNL-0476-02-02-00-1	2646	CONTROL PANEL ASSEMBLY	1
5	PLY-0476-03-00-00-0	2353	TORCH PLATE COMPLATE	1
6	WSP-0476-05-00-00-0	2355	SLIDE BRACKET	1
7	UCW-0476-07-00-00-0	2358	CABLE ANCHOR ASSEMBLY	1
8	WOZ-0476-11-00-00-0	2359	DRIVE SYSTEM ASSY	1
9	TBL-0476-15-01-02-0		NAME PLATE "Lizard"	1
10	UCW-0476-20-00-00-0	2361	TORCH HOLDING ASSY	1
11	ZSP-0466-03-00-00-0	2062	CROSS SLIDES ASSY	1
12	KUL-0466-13-00-00-0	2143	BALL LEVEL	1
13	NIT-000010		ROUND HEAD RIVET 2x6	4
14	RKJ-000038		HANDLEVER GN 300-45-M6-20-SW,	1
15	PDK-000017		ROUND WASHER 5,3	4
16	PDK-000021		ROUND WASHER 6,4	4
17	SRB-000075		HEX SOCKET BOLT M5 x 10	8
18	SRB-000083		HEX SOCKET BOLT M5x16	4
19	SRB-000114		HEX. SOCKET BOLT M6x20	4
20	WKR-000057		SSS M 6 x 6-8.8 FLAT POINT	1
21	WKR-000092		SOCKET BUTTON HEAD CAP SCREW M4x10	4
22	NKL-0466-15-01-02-0		LOGO LABEL	1
23.1	PWD-0466-18-00-00-0		POWER CORD 230V	1
23.1	PWD-0466-16-00-00-0		POWER CORD 115V	1
23.2	KBL-0466-17-00-00-0		CONTROL CABEL START-STOP	1
23.3	UCW-0476-06-00-00-0	2072	LOW TORCH HOLDING ASSY	1
23.4*	KLC-000007		HEX. WRENCH S=4	1
23.5*	INS-0239-64-00-01-0		OPERATORS MANUAL	1

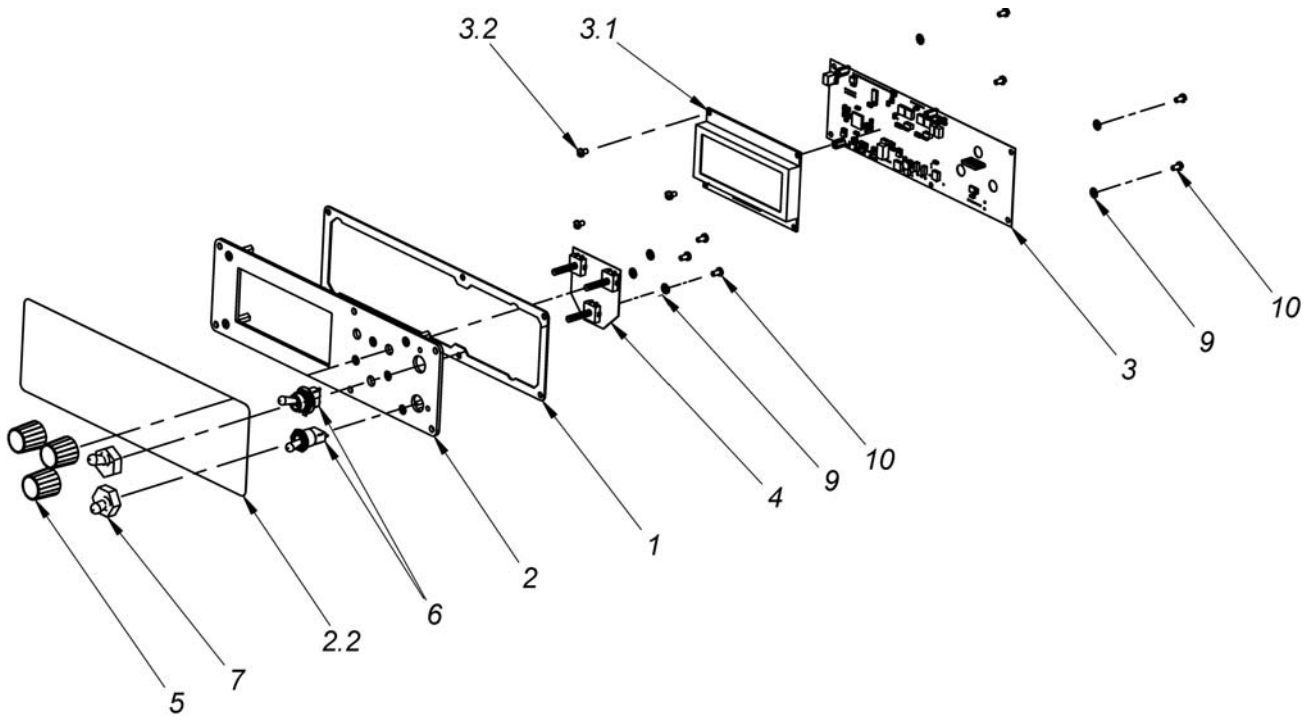
* - not shown on drawing

GENERAL ASSEMBLY



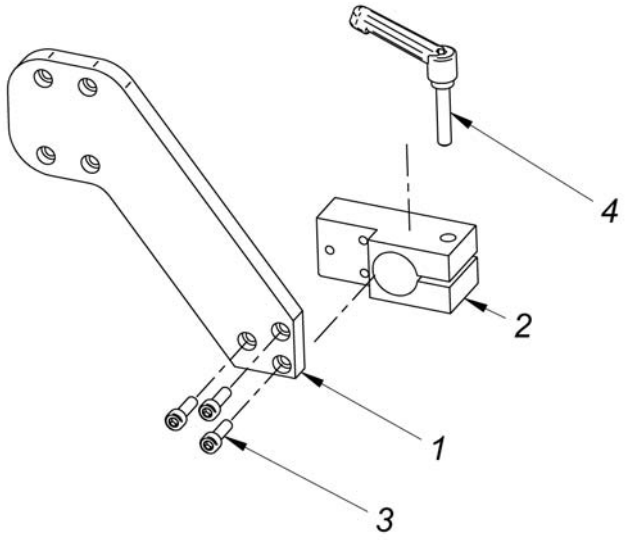
CONTROL PANEL ASSEMBLY

PNL-0476-02-02-00-1			CONTROL PANEL ASSEMBLY	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
4.1	USZ-0476-02-02-01-0		PANEL PLATE SEAL	1
4.2	MSK-0476-02-02-10-0	2384	PANEL PLATE ASSY	1
4.2.2	NKL-0476-15-01-01-0		PANEL PLATE LABEL	1
4.3	MDL-0476-02-02-20-1		ELECTRONIC CONTROLLER COMPLATE	1
4.3.1	MDL-0476-02-02-22-0		DISPLAY MODULE,	1
4.3.2	SRB-000307		PLASTIC SCREW M3x5	3
4.4	MDL-0476-02-02-30-1		ENCODER MODULE,	1
4.5	PKT-000016		POT. HANDWEEL K11/6D	3
4.6	WZK-0476-02-02-02-0		DIRECTION OF MOTION WIRE SET	1
4.7	OSL-000036		LEVER KEY COVER	2
4.9	PDK-000058		WASHER,LOCK,INTERNAL STAR M3	7
4.10	WKR-000181		CROSS RECESSED SCREW M3x6	7

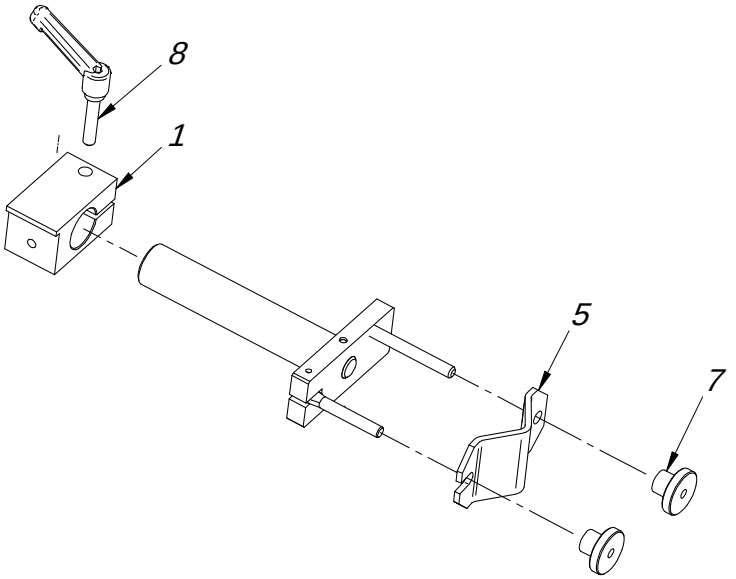


TORCH PLATE & CABLE ANCHOR ASSEMBLIES

PLY-0476-03-00-00-0			TORCH PLATE ASSEMBLY	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
5.1	LCZ-0476-03-01-00-0	2389	PLATE	1
5.2	KST-0466-05-02-00-0	2106	BLOCK PLATE	1
5.3	SRB-000174		HEX. SOCKET BOLT M5 x 16	3
5.4	RKJ-000036		HANDLEVER GN 300-45-M6-32-SW,	1

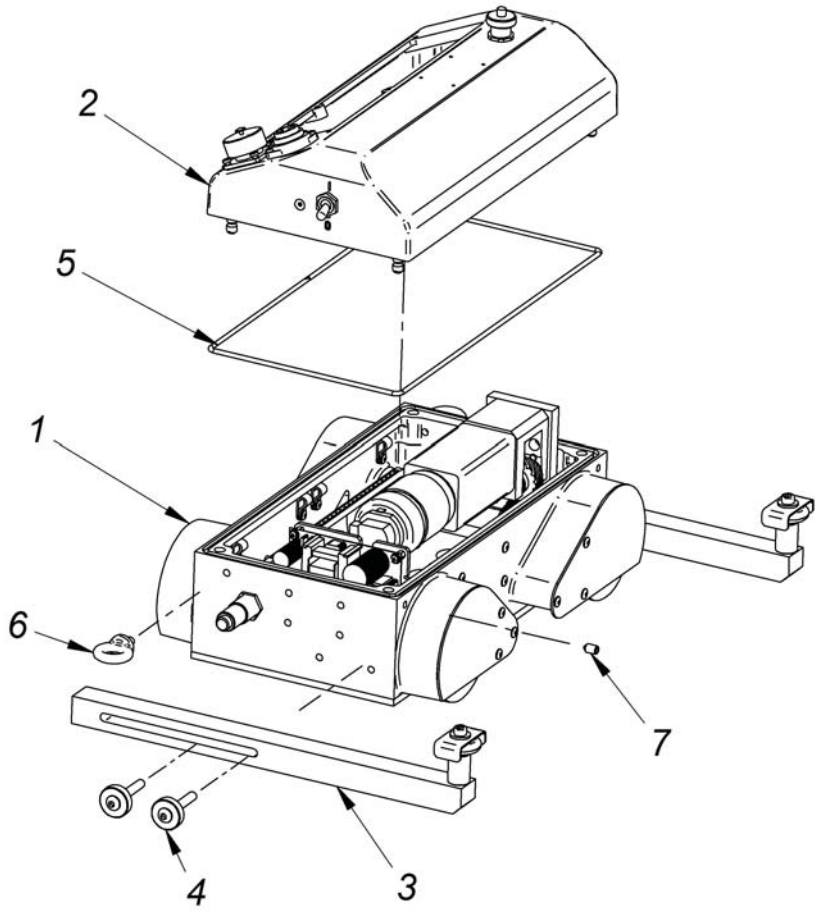


UCW-0476-07-00-00-0			CABLE ANCHOR ASSEMBLY	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
7.1	KST-0476-07-01-00-0	2391	CABLE HOLDING HOUSING	1
7.5	TRM-0219-06-16-00-0	2401	CLAMP PLATE I	1
7.7	NKR-000121		KNURLED NUT M6	2
7.8	RKJ-000036		HANDLEVER GN 300-45-M6-32-SW,	1



DRIVE SYSTEM ASSEMBLY

WOZ-0476-11-00-00-0			DRIVE SYSTEM ASSEMBLY	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
8.1	ZSP-0476-01-00-00-0	2395	DRIVE SYSTEM	1
8.2	PKR-0476-02-00-00-0	2396	CONTROLLER HOUSING COMPLATE	1
8.3	PRW-0476-04-00-00-0	2397	FOLLOWER ASSEMBLY,	2
8.4	SRB-0476-08-00-00-0		FOLLOWER SCREW,	4
8.5	USZ-0476-09-00-00-0		SEAL	1
8.6	SRB-000278		EYE BOLT M6DIN 580	2
8.7	WKR-000066		SOCKET SET SCREW M6x10	4

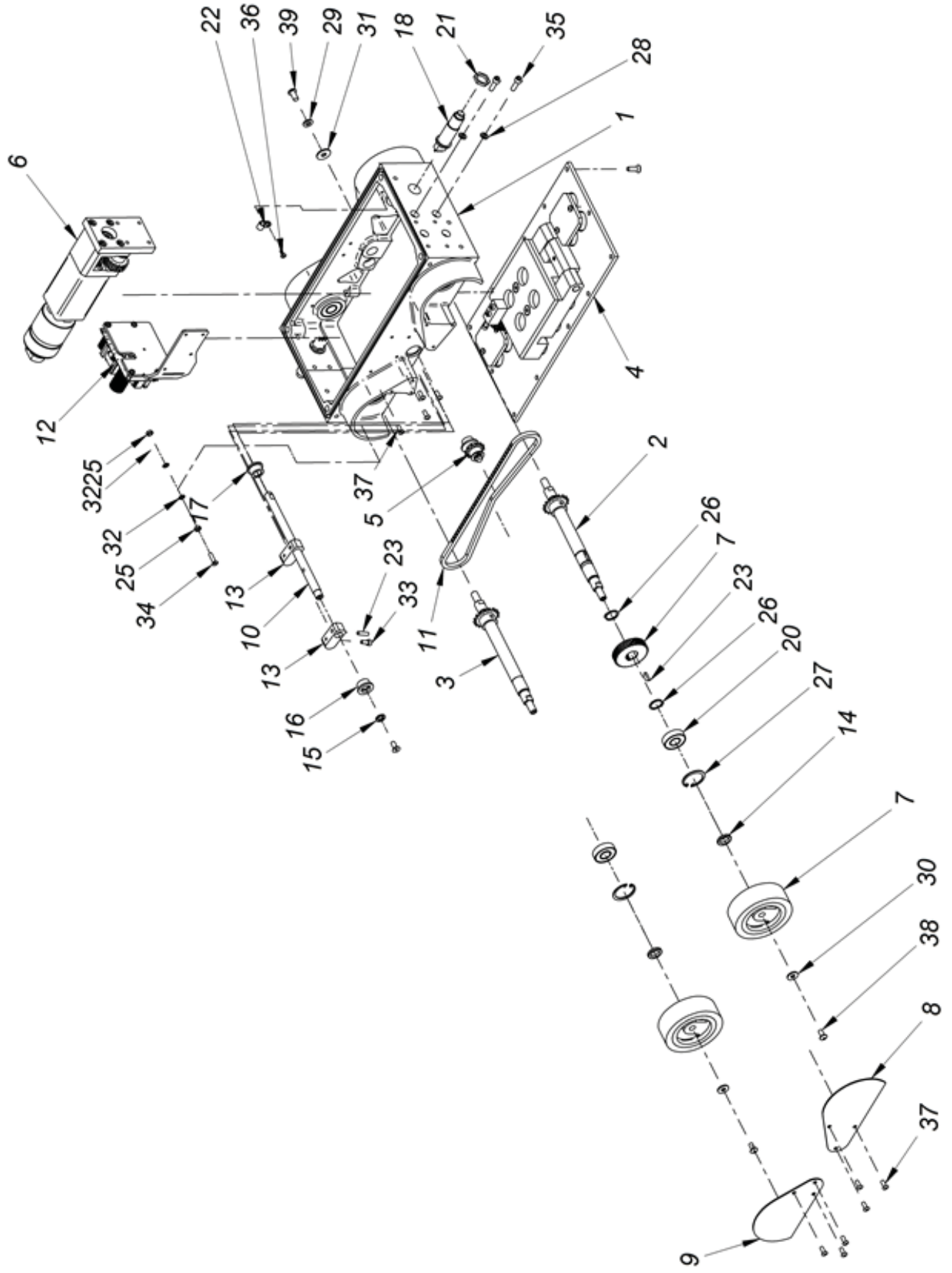


DRIVE SYSTEM

ZSP-0476-01-00-00-0			DRIVE SYSTEM	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
8.1.1	KRP-0476-01-01-00-1	2402	FRAME,	1
8.1.2	WLK-0476-01-02-00-0		FRONT DRIVE SHAFT ASSY,	1
8.1.3	WLK-0476-01-03-00-0		BACK DRIVE SHAFT ASSY,	1
8.1.4	BLO-0476-01-04-00-0	2433	MAGNET BLOCK ASSEMBLY	1
8.1.5	NPN-0476-01-05-00-0		CHAIN TENSIONER	1
8.1.6	RDK-0476-01-06-00-0		GEAR CASE ASSEMBLY,	1
8.1.7	KOL-0476-01-07-00-0	2252	DRIVE WHEEL,	4
8.1.8	OSL-0476-01-08-00-0		WHEEL GUARD RIGHT,	1
8.1.9	OSL-0476-01-09-00-0		WHEEL GUARD LEFT,	1
8.1.10	OSK-0476-01-10-00-0		SHAFT	1
8.1.11	LNC-0476-01-14-00-0		ROLLER CHAIN	1
8.1.12	ZSL-0476-01-15-00-0		POWER SUPPLY ASSEMBLY,	1
8.1.13	KRZ-0233-01-16-00-0		CAM	2
8.1.14	PDK-0233-01-21-00-0		DISTANCE WASHER 12,1x19x3,	4
8.1.15	PDK-0233-01-23-00-0		WASHER 6,4x12x1,6,	1
8.1.16	TLJ-0233-01-27-00-0		SLEEVE BEARING 9x16x10	1
8.1.17	TLJ-0233-01-28-00-0		SLEEVE BEARING 12x16x10	1
8.1.18	ZSP-0476-01-16-00-0		LIMIT SWITCH ASSY	1
8.1.19	KOL-0466-01-08-00-0		BEVEL GEAR z30	1
8.1.20	LOZ-000038		BEARING BALL 6001 SEALED	4
8.1.21	NKR-000115		NUT NDM-16, M16x1,5,	2
8.1.22	OBJ-000002		HOLDER FOR FIX LEADS 4	4
8.1.23	WPS-000027		WOODRUFF KEY 3x5x13	1
8.1.24	KLK-000013		SPRING PIN 4x16	2
8.1.25	NKR-000013		HEX NUT M4	2
8.1.26	PRS-000005		EXTERNAL RETAINING RING 15z	2
8.1.27	PRS-000018		INTERNAL RETAINING RING 28W	2
8.1.28	PDK-000017		ROUND WASHER 5,3	4
8.1.29	PDK-000021		ROUND WASHER 6,4	1
8.1.30	PDK-000036		ROUND WASHER 5,5	4
8.1.31	PDK-000037		ROUND WASHER 6,5	1
8.1.32	PDK-000166		WASHER,LOCK,INTERNAL STAR 4,3	2
8.1.33	SRB-000061		HEX SOCKET BOLT-M4X10	2
8.1.34	WKR-000152		SCREW M4 x 16	1
8.1.35	SRB-000083		HEX SOCKET BOLT M5x16	4
8.1.36	WKR-000313		SOCKET BUTTON HEAD CAP SCREW M3x8,	4
8.1.37	WKR-000092		SOCKET BUTTON HEAD CAP SCREW M4x10	10
8.1.38	WKR-000096		SOCKET BUTTON HEAD CAP SCREW M5x10	4
8.1.39	WKR-000290		SOCKET BUTTON HEAD CAP SCREW M6x12	1
8.1.40	WKR-000134		SCR, M5 x 12 FHSCS	1
8.1.41	WKR-000136		SCR, M5 x 16 FHSCS	12
8.1.42*	WZK-0476-01-17-00-0		ELECTRONIC CONTROLLER POWER WIRE SET	1
8.1.43*	PWD-0476-01-18-00-0		EARTH CONDUCTOR	1

* - not shown on drawing

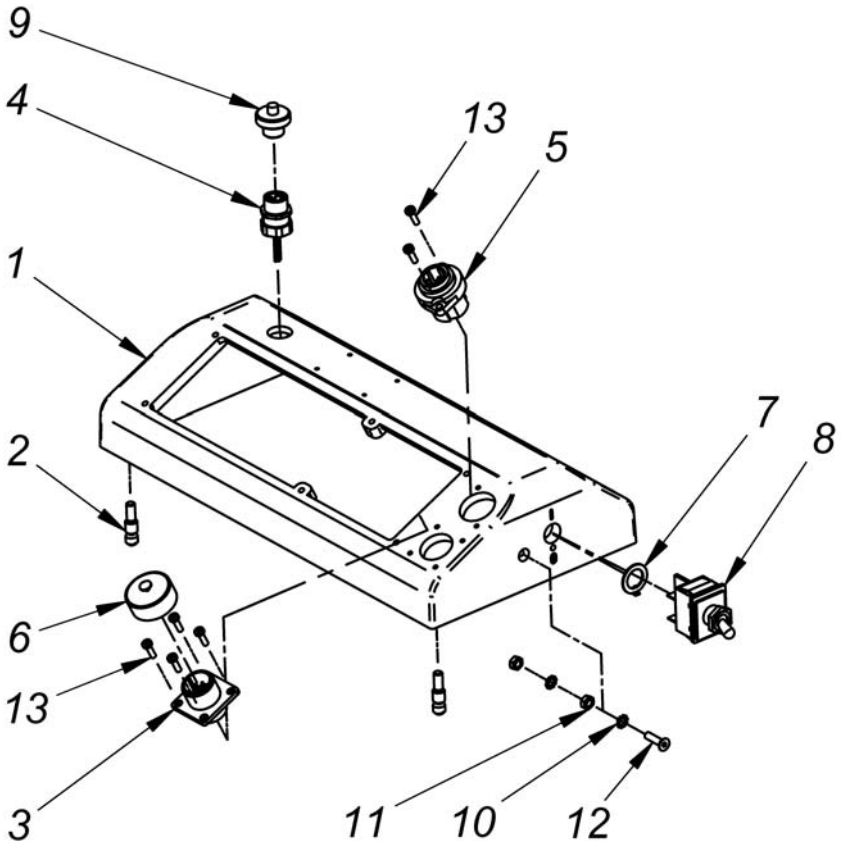
DRIVE SYSTEM



CONTROLLER HOUSING ASSEMBLY

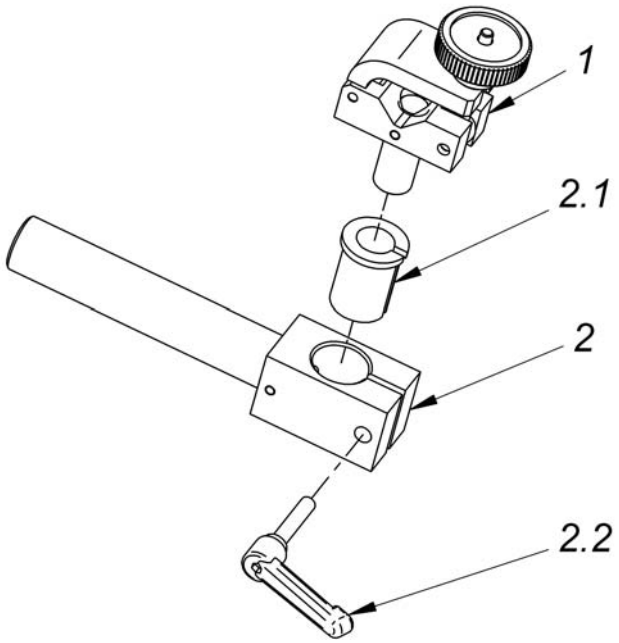
PKR-0476-02-00-00-0			CONTROLLER HOUSING ASSEMBLY	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
1.8.2.1	PKR-0476-02-01-00-1	2400	CONTROLLER HOUSING	1
1.8.2.2	SZP-0476-02-03-00-0		PIN	4
1.8.2.3	WZK-0476-02-04-00-0		IGNITION WIRE SET	1
1.8.2.4	WZK-0476-02-06-00-0		OSCILLATION MODULE WIRE SET	1
1.8.2.5	WZK-0476-02-05-00-0		POWER WIRE SET	1
1.8.2.6	NKR-000120		SAFETY NUT	1
1.8.2.7	PDK-000165		LOCKING WASHER 12/19	1
1.8.2.8	PNK-000026		LEVER KEY, 641 H/3	1
1.8.2.9	ZLP-000025		PLUG M12 SERIES713,	1
1.8.2.10	PDK-000060		SPRING WASHER 4,3	2
1.8.2.11	NKR-000013		HEX NUT M4	2
1.8.2.12	WKR-000435		SCR, M4x16 FHSCS	1
1.8.2.13	WKR-000427		CROSS RECESSED SCREW M3x10	6
1.8.2.14*	WZK-0476-02-07-00-0		IMPULSE WIRE SET	1

* - not shown on drawing



TORCH HOLDING ASSEMBLIES

UCW-0476-20-00-00-0			TORCH HOLDING ASSEMBLY	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
10.1	ZRZ-0466-04-01-00-0	2093	TORCH CLAMP ASSY,	1
10.2	WLK-0476-20-01-00-0	2710	SHORT TORCH BRACKET ASSY	
10.2.1	TLJ-0419-04-02-03-0		INSULATION SLEEVE,	1
10.2.2	RKJ-000036		HANDLEVER GN 300-45-M6-32-SW,	1



UCW-0476-06-00-00-0			LOW TORCH HOLDING ASSY,	
ITEM	**PART NUMBER**	**VERSION**	**DESCRIPTION**	**Q-TY**
23.3.1	ZCS-0476-06-01-00-0	2093	CLAMPING BLOCKS	1
23.3.2	TRM-0476-06-10-00-0	2710	TORCH BRACKET ASSY	
23.3.2.1	TLJ-0419-04-02-03-0		INSULATION SLEEVE,	1
23.3.2.2	RKJ-000036		HANDLEVER GN 300-45-M6-32-SW,	1